

I claim:

1. A process for producing a noble metal-containing titanium zeolite, which comprises reacting a titanium compound, a silicon source, a templating agent, and a noble metal source at a temperature and for a time sufficient to form a molecular sieve.
2. The process of claim 1 wherein the titanium compound is selected from the group consisting of titanium halides, titanium alkoxides, and mixtures thereof.
3. The process of claim 2 wherein the titanium compound is a titanium alkoxide selected from the group consisting of titanium tetraethoxide, titanium tetraisopropoxide, titanium tetrabutoxide, and mixtures thereof.
4. The process of claim 1 wherein the silicon source is selected from the group consisting of colloidal silica, fumed silica, silicon alkoxides, and mixtures thereof.
5. The process of claim 4 wherein the silicon source is a silicon alkoxide selected from the group consisting of tetraethylorthosilicate, tetramethylorthosilicate, and mixtures thereof.
6. The process of claim 1 wherein the templating agent is selected from the group consisting of tetraalkylammonium hydroxide, tetraalkylammonium halides, and mixtures thereof.
7. The process of claim 6 wherein the templating agent is selected from the group consisting of tetrapropylammonium hydroxide, tetrapropylammonium halides, and mixtures thereof.
8. The process of claim 1 wherein the noble metal source comprises one or more noble metals selected from the group consisting of palladium, platinum, gold, silver, iridium, rhenium, ruthenium, and osmium.
9. The process of claim 1 wherein the noble metal-containing titanium zeolite comprises a titanium silicalite is selected from the group consisting of TS-1 and TS-2.
10. A process comprising reacting an olefin, hydrogen, and oxygen in the presence of a noble metal-containing titanium zeolite, wherein the noble metal-containing titanium zeolite is produced by reacting a titanium compound, a silicon source, a templating agent, and a noble metal source at a temperature and for a time sufficient to form a molecular sieve.

11. The process of claim **10** wherein the titanium compound is selected from the group consisting of titanium halides, titanium alkoxides, and mixtures thereof.

12. The process of claim **11** wherein the titanium compound is a titanium alkoxide selected from the group consisting of titanium tetraethoxide, titanium tetraisopropoxide, titanium tetrabutoxide, and mixtures thereof.

13. The process of claim **10** wherein the silicon source is selected from the group consisting of colloidal silica, fumed silica, silicon alkoxides, and mixtures thereof.

14. The process of claim **13** wherein the silicon source is a silicon alkoxide selected from the group consisting of tetraethylorthosilicate, tetramethylorthosilicate, and mixtures thereof.

15. The process of claim **10** wherein the templating agent is selected from the group consisting of tetraalkylammonium hydroxide, tetraalkylammonium halides, and mixtures thereof.

16. The process of claim **15** wherein the templating agent is selected from the group consisting of tetrapropylammonium hydroxide, tetrapropylammonium halides, and mixtures thereof.

17. The process of claim **1** wherein the noble metal source comprises one or more noble metals selected from the group consisting of palladium, platinum, gold, silver, iridium, rhenium, ruthenium, and osmium.

18. The process of claim **10** wherein the olefin is a C₂-C₆ olefin.

19. The process of claim **10** wherein the olefin is propylene and propylene oxide is formed.

20. The process of claim **10** wherein reaction of olefin, hydrogen, and oxygen is performed in a reaction solvent selected from the group consisting of methanol, ethanol, isopropanol, tert-butanol, water, and mixtures thereof.